

Comparison of the Poleward Transport of Ozone in the Northern and
Southern Hemispheres

by

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ABSTRACT

Six and one-half years of NOAA/NMC gridded SBUV ozone data and temperature data are used to extend Geller et al.'s (1988) study comparing the transport of ozone to high latitudes in the Northern and Southern Hemispheres. In this earlier study, it was pointed out that the poleward transport of ozone varies annually in the Northern Hemisphere but has a marked semiannual behavior in the Southern Hemisphere. This earlier study covered the period from December 1978 to November 1982. Two and one-half additional years have now been analyzed so that the analysis now extends to July 1986. With this extended data set, the maximum rate of

increase in total ozone is seen to occur in January in the Northern Hemisphere for all of the years investigated. In the Southern Hemisphere, the maximum rate of increase is seen in September for almost all of the years with a secondary maximum in the rate of increase in total ozone often being seen during the March-April period. The nature of the seasonal variation in total ozone is found to be much more variable in the Southern hemisphere than in the Northern Hemisphere.

Wave number one dominates the planetary wave contributions to the poleward transport of ozone in both hemispheres. The amplitude of planetary wave number one also is seen to undergo an annual variation in the Northern Hemisphere and a semiannual variation in the Southern Hemisphere as opposed to wave number two which shows more of an annual variation in both hemispheres.

The computed poleward ozone transports will be shown for this six and one-half year period to see the relation between it and the rate of change of ozone at high latitudes on daily, seasonal, and year-to-year time scales.

REFERENCES

Geller, M. A., M.-F. Wu, and E. R. Nash, 1988: Satellite data analysis of ozone differences in the Northern and Southern Hemispheres. To appear in Pure Appl. Geophys.